

1 UNITED STATES PATENT AND TRADEMARK OFFICE

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3  
4 BEFORE THE BOARD OF PATENT APPEALS  
5 AND INTERFERENCES  
6

7  
8 *Ex parte* STEPHEN JOHN RUIZ  
9

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11 Appeal 2007-1860  
12 Application 09/716,113  
13 Technology Center 3600  
14

15  
16 Decided: October 31, 2007  
17  
18  
19

20 *Before:* JENNIFER D. BAHR, ANTON W. FETTING and  
21 STEVEN D.A. McCARTHY, *Administrative Patent Judges.*  
22  
23 McCARTHY, *Administrative Patent Judge.*  
24

25 DECISION ON APPEAL

26  
27 STATEMENT OF THE CASE

28 Appellant appeals under 35 U.S.C. § 134 (2002) from the final  
29 rejection of claims 1, 3, 5, 6, 21, 23, 25 and 26. 35 U.S.C. §134 (2002). We  
30 have jurisdiction under 35 U.S.C. § 6(b) (2002).<sup>1</sup>

31 The Appellant's invention relates to improved air flow motion over a  
32 disk brake rotor system used in a vehicle. (Specification 1). As described in  
33 the Appellant's Specification:

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1 <sup>1</sup> This application was the subject of previous Appeal 2004-0998.

4

1

2 Through mechanical linkage, the movement of [a]  
3 brake pedal is transmitted to a set of opposing  
4 fixed brake pads, between which is a brake rotor  
5 that rotates as the axle of the automobile turns  
6 from the rotation of the wheel assembly . . . . The  
7 brake rotor may be fixed to the hub of a vehicle  
8 axle by an array of drive pin or drive lug/bolt  
9 combinations radially distributed about the  
10 axle. . . .

11 As the driver applies force to the brake  
12 pedal, that force may be transmitted as friction to  
13 the moving brake rotor by the fixed brake pads so  
14 as to slow the vehicle down or bring it to rest  
15 through controlled slippage. The energy absorbed  
16 by the controlled slippage may be converted into  
17 heat, principally within the brake rotor.  
18

19(Specification 1). Air flow through the disk brake rotor system aids in the  
20dissipation of this heat. *Id.*

21 Independent claims 1 and 21 read as follows:

22

23 1. A mounting hat for a brake rotor  
24 comprising:  
25 a lower section coupled to an upper section,  
26 *a plurality of aerodynamically shaped*  
27 *standoff vanes each having a leading edge, a*  
28 *trailing edge, a top, and a bottom coupled to the*  
29 *upper section, the aerodynamically shaped standoff*  
30 *vanes space apart the upper section from a brake*  
31 *rotor, wherein the leading edge and the trailing*  
32 *edge are curved and have different shapes; and*  
33 a plurality of vents formed between adjacent  
34 aerodynamically shaped standoff vanes, wherein  
35 the vents are circumferentially distributed on the  
36 upper section, and air located within said mounting  
37 hat and air deflected from said brake rotor are

8

1 induced to substantially flow through the plurality  
2 of vents in a direction outward from a radial  
3 interior of said mounting hat to a radial exterior of  
4 said mounting hat. [Emphasis added.]  
5

6 21. A brake rotor comprising:  
7 a rotor,  
8 a hub having *a plurality of aerodynamically*  
9 *shaped standoff vanes each having a leading edge,*  
10 *a trailing edge,* a top, a bottom and a plurality of  
11 vents formed between adjacent aerodynamically  
12 shaped standoff vanes coupled to the rotor, *the*  
13 *leading edge and the trailing edge each having*  
14 *different shapes,* wherein the vents are  
15 circumferentially distributed between the hub and  
16 the rotor, air flow is induced to flow through the  
17 plurality of vents, and the aerodynamically shaped  
18 standoff vanes space apart the hub from the rotor.  
19 [Emphasis added]  
20

21 The appealed claims are rejected under 35 U.S.C. § 102(b) as being  
22 anticipated by Caskey (U.S. Patent 3,403,760). Caskey discloses a two-  
23 piece rotor for a disk brake including a brake disk and an attaching hub.  
24 (Caskey, col. 2, ll. 54-65). The Examiner contends that the attaching hub  
25 disclosed in Caskey has a plurality of “aerodynamically shaped standoff  
26 vanes” and that these “aerodynamically shaped standoff vanes” have leading  
27 and trailing edges which are curved and have different shapes. (Ans. 4 and  
28 8). The Appellant contends that the leading and trailing edges of these  
29 structures do not have different shapes. (Br. 5-6).

30 We reverse.  
31  
32

1 ISSUE

2 The sole issue in this appeal is whether the Appellant has shown that  
3the Examiner erred in contending that Caskey discloses a mounting hat or  
4hub for a disk brake rotor including standoff vanes with leading and trailing  
5edges having different shapes.

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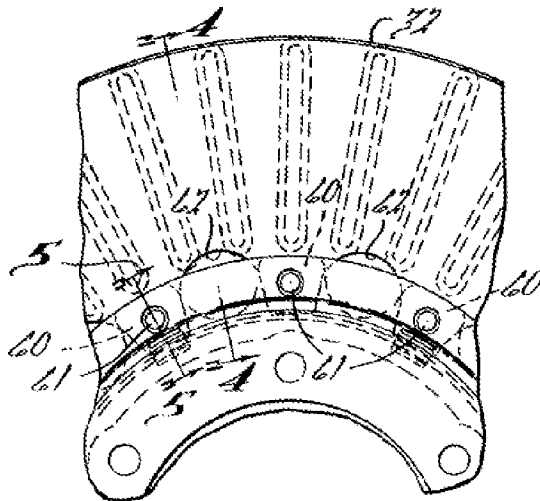
7 FINDINGS OF FACT

8 The record supports the following findings of fact by a preponderance  
9of the evidence.

10 1. The phrase “different shapes” consists of commonly understood  
11words. The widely accepted meaning of this phrase excludes shapes which  
12are symmetrical, that is, which are merely “flipped over” so that one shape is  
13a duplicate of the other. One dictionary defines shape as a “spatial form or  
14contour that is [usually fixed] by a relatively constant spatial relation  
15between the parts of the periphery or surface . . . .” WEBSTER’S THIRD NEW  
16INTERNATIONAL DICTIONARY at 2087 (G. & C. Merriam Co. 1971) (entry 2,  
17definition 1b). This definition implies that a “shape” is a geometrical  
18abstraction. As such, shapes can be compared by mentally “flipping one  
19shape over” and moving that shape toward the other to see if the two shapes  
20may be made coincident with one another. Therefore, two “shapes,” one of  
21which may be “flipped over” so that one shape is a duplicate of the other, are  
22not “different.” There is no evidence in the specification or the prosecution  
23history sufficient to demonstrate that the phrase “different shapes” as used in  
24claims 1 and 21 should be given a meaning broader than this widely  
25accepted meaning.

1        2.        Caskey (U.S. Patent 3,403,760) issued October 1, 1968, more  
2 than one year before the Appellant's filing date.

3           3.       Caskey discloses a two-piece rotor for a disk brake including a  
4brake disk and an attaching hub. (Caskey, col. 2, ll. 54-65). Figure 3 of  
5Caskey is reproduced below.



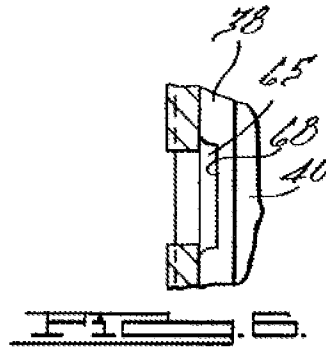
6  
7Figure 3 is a sectional view of Caskey's wheel structure showing a broken-  
8away portion of the brake disk (32) and the attaching hub. Arrows 3-3 in  
9Fig. 2 (not reproduced) indicate that the view depicted in Fig. 3 is parallel to  
10an axis of the wheel structure.

4. Caskey discloses that “the attaching hub [ ] has a radially extending flange [ ] which is employed to attach the braking disk portion 32 of the two-piece or composite rotor to the attaching hub [ ]. This is accomplished by means of spaced radially inwardly extending tabs 60 positioned about the inner periphery of the disk 32 that are positioned in engagement with the flange [ ] at spaced intervals around the periphery of the disk 32.” (Caskey, col. 3, ll. 10-17 [reference numerals not appearing in Fig. 3 omitted]). Caskey further discloses that this flange “is provided with

1recesses [ ] at spaced positions thereof on either side of the tabs 60 to  
2provide air-directing surfaces [ ] that are spaced from the brake engaging  
3surface [ ] of the disk 32.” (*Id.*, col. 3, ll. 26-29). [reference numerals not  
4appearing in Fig. 3 omitted].

5        5.        Caskey’s flange appears to include structure corresponding to  
6the “standoff vanes” of claims 1 and 2, namely, portions of the flange  
7surrounding the recesses along an azimuthal direction.

8        6.        Caskey describes the recesses as “generally rectangular” in  
9radial configuration. (Caskey, col. 3, ll. 34-38). This description is  
10illustrated in Figure 6 of Caskey, which is reproduced below.



11  
12Figure 6 is a sectional view of Caskey’s brake disk and attaching hub  
13looking radially inwardly from outside the attaching hub toward one of the  
14recesses (65) in the flange (38).

15        7.        The surface surrounding the recess (65) shown in Fig. 6 appears  
16to include an azimuthally extending edge or first portion (68) and edges (no  
17reference numeral) extending generally axially from opposite ends of the  
18first portion (68). The latter edges correspond to the “leading edge” and the  
19“trailing edge” of claims 1 and 21.

20        8.        Figure 3 of Caskey appears to show a set of hidden lines  
21depicting the generally axially extending edges of the recesses (65 in Fig. 6).

1

2These hidden lines are not identified by a reference numeral in Fig. 3. In  
3light of the shapes of the hidden lines in Fig. 3 and of the section of the  
4recess (65) in Fig. 6, Caskey's standoff vanes appear to have symmetrical  
5leading and trailing edges.<sup>2</sup>

6

7

## ANALYSIS

8 The Examiner rejected claims 1, 3, 5, 6, 21, 23, 25 and 26 as  
9anticipated by Caskey. "A claim is anticipated only if each and every  
10element as set forth in the claim is found, either expressly or inherently  
11described, in a single prior art reference." *Verdegaal Bros. v. Union Oil of*  
12*California*, 814 F.2d 628, 631 (Fed. Cir.), *cert. denied*, 484 U.S. 827 (1987).  
13The Examiner contends that "Caskey's leading edge and trailing edge of a  
14standoff vane are of different shapes in that each edge curves in an opposite  
15direction, as shown in figure 3 of Caskey above." (Ans. 13). The Appellant  
16disagrees. If Caskey's attaching hub does not include structure  
17corresponding to standoff vanes with leading and trailing edges having  
18different shapes, then Caskey does not anticipate the appealed claims.

19 The first step in determining whether Caskey discloses an attaching  
20hub including standoff vanes with leading and trailing edges having different  
21shapes is to determine the broadest reasonable interpretation of the phrase  
22"different shapes" as that phrase is used in claims 1 and 21. When  
23addressing issues of anticipation,

25<sup>2</sup> The briefs included some discussion regarding whether the tabs (60 in  
26Fig. 3) have differently shaped leading and trailing edges. *E.g.*, Br., 5-6.  
27Since the Examiner does not contend that the tabs (60) correspond to the  
28"standoff vanes" recited in claims 1 and 21 (Ans. 13), these arguments have  
29not been considered.

1  
2 the [Patent and Trademark Office] applies to the  
3 verbiage of the proposed claims the broadest  
4 reasonable meaning of the words in their ordinary  
5 usage as they would be understood by one of  
6 ordinary skill in the art, taking into account  
7 whatever enlightenment by way of definitions or  
8 otherwise that may be afforded by the written  
9 description contained in the applicant's  
10 specification.  
11

12*In re Morris*, 127 F.3d 1048, 1054 (Fed. Cir. 1997).

13 The phrase “different shapes” consists of commonly understood  
14words. “In some cases, the ordinary meaning of claim language as  
15understood by a person of skill in the art may be readily apparent even to lay  
16judges, and claim construction in such cases involves little more than the  
17application of the widely accepted meaning of commonly used words.”  
18*Phillips v. AWH Corp.*, 415 F.3d 1303, 1314 (Fed. Cir. 2005) (citing *Brown*  
19*v. 3M*, 265 F.3d 1349, 1352 (Fed. Cir. 2001)). The widely accepted meaning  
20of the words “different shapes” excludes shapes which are symmetrical, that  
21is, merely “flipped over” so that one shape is a duplicate of the other. There  
22is no evidence in the specification or the prosecution history sufficient to  
23demonstrate that the phrase “different shapes” as used in claims 1 and 21  
24should be given a meaning broader than this widely accepted meaning.

25 The Examiner contends that “Caskey’s leading edge and trailing edge  
26of a standoff vane are of different shapes in that each edge curves in an  
27opposite direction, as shown in figure 3 of Caskey above.” (Ans., 13). The  
28phrase “different shapes” as used in claims 1 and 21 cannot be extended





39Appeal 2007-1860  
40Application 09/716,113

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## DECISION

3 The Examiner's rejection of claims 1, 3, 5, 6, 21, 23, 25 and 26 is  
4reversed.

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## REVERSED

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8~~APIs Initials:~~

9~~SDAM~~

10~~JDB~~

11~~AWF~~

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15vsh

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19BLAKELY SOKOLOFF TAYLOR & ZAFMAN LLP

2012400 WILSHIRE BOULEVARD

21SEVENTH FLOOR

22LOS ANGELES CA 90025

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